Amendment to the Claims

1-53. (Previously canceled).

54. (Previously Added) A method for multicasting internet protocol (IP) messages to mobile nodes in a wireless network having a home domain comprising a home agent and at least one foreign domain having a foreign agent, wherein each of the home and foreign domains further comprise a main access router attached to a plurality of base station routers, and wherein each base station router is connected to one or more base stations for communicating with mobile nodes in a coverage area of the base station router, comprising the steps of:

transmitting an agent advertisement message from a foreign agent in a foreign domain to be broadcast in the foreign domain, wherein the agent advertisement message includes a network access identifier extension that indicates a capability of the foreign agent to support source specific multicast services for multicasting IP messages;

receiving by a base station router in the foreign domain a mobile IP registration request from a mobile node entering the coverage area of the base station router, wherein the mobile IP registration request includes a request by the mobile node to access the foreign domain and a multicast flag to indicate a request for source specific multicast services;

in response to determining no registration of the mobile node in a binding cache of the base station router, performing the following steps:

appending an IP address of the base station router in a BSR extension to the mobile IP registration request;

transmitting by the base station router the mobile IP registration request with the BSR extension to the main access router in the foreign domain;

forwarding the mobile IP registration request from the main access router in the foreign domain to a home agent in a home domain of the mobile node;

if the home agent supports simple multicast extensions for multicasting IP messages, allocating a source specific multicast address to the mobile node and appending the source specific multicast address in a source specific multicast address extension to a mobile IP registration reply;

receiving by the base station router the mobile IP registration reply from the main access router, wherein the mobile IP registration reply includes the source specific multicast address-extension;

creating an entry in a binding cache of the base station router having information on the mobile node and assigned source specific multicast address extension; and

forwarding the registration reply and source specific multicast address to the mobile node, wherein the mobile node then subscribes to the source specific multicast channel.

55. (Previously Added) The method of claim 54, further comprising:

intercepting by the home agent a first IP message addressed to the mobile node from a correspondent node when the mobile node is in the foreign domain;

tunneling the first IP message into a second IP packet addressed to the source specific multicast address assigned to the mobile node;

forwarding the second IP packet by the foreign agent to the mobile node; and

detunneling the second IP packet by the mobile node to read the first IP message.

56. (Previously Added) The method of claim 55, further comprising:

transmitting a binding update message to a correspondent node of the mobile node, wherein the binding update message includes a care-of address for the mobile node;

receiving an acknowledgement from the correspondent node; and

transmitting a source update message to the mobile node informing the mobile node that the correspondent node received a binding update message.

57. (Previously Added) The method of claim 56, wherein the care-of address for the mobile node is the source specific multicast address assigned to the mobile node.

58. (Previously Added) The method of claim 56, wherein the mobile IP registration request includes a field that can be set by the mobile node to request that the home agent keep its source specific multicast address private in any binding update messages.

59. (Previously Added) The method of claim 58, wherein the care of address in the binding update message is an address of the home agent.

60. (Previously Added) The method according to claim 56, wherein the home agent transmits said binding update message to the correspondent node in response to receiving a binding request message from the correspondent node.

61. (Previously Added) The method according to claim 56, wherein the home agent transmits said binding update message to the correspondent node in response to receiving a binding warning message from the mobile node.

62. (Previously Added) The method of claim 56, further comprising the steps of:

determining by the mobile node from the network access identifier extension to the agent advertisement message whether the mobile node has entered a new foreign domain with a new foreign agent; and

transmitting the mobile IP registration request in response to entering a new foreign domain with a new foreign agent.

63. (Previously Added) The method of claim 62, further comprising the steps of:

determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node has not entered a new foreign domain but has entered into coverage area of a new foreign agent within the same foreign domain;

transmitting a multicast subscription request with an authentication extension to the new foreign agent in response to entering coverage area of the new foreign agent within the same foreign domain, wherein the multicast subscription request includes address of the home agent for the mobile node and address of each correspondent that has received a binding update message from the home agent.

64. (Previously Added) The method of claim 63, further comprising the steps of:

in response to receiving a multicast subscription request from the mobile node, verifying the mobile node authentication by the foreign agent and retrieving session key information.

65. (Previously Added) The method of claim 64, further comprising the steps of:

relaying traffic to the mobile node on the source specific multicast channels formed by associating the source specific multicast address of the mobile node to each correspondent address in the multicast subscription request.

66. (Previously Added) A method for multicasting internet protocol (IP) messages to mobile nodes in a wireless network having a home domain comprising a home agent and at least one foreign domain having a foreign agent, wherein each of the home and foreign domains further comprise a main access router attached to a plurality of base station routers, and wherein each base station router is connected to one or more base stations for communicating with mobile nodes in a coverage area of the base station router, comprising the steps of:

transmitting an agent advertisement message from a foreign agent in a foreign domain to be broadcast in the foreign domain, wherein the agent advertisement message includes a network access identifier extension that includes a network access identifier of the foreign agent and capability of the foreign agent to support source specific multicast services for multicasting IP messages;

determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node has entered a new foreign domain with a new foreign agent;

transmitting a mobile IP registration request in response to entering a new foreign domain with a new foreign agent, wherein the mobile IP registration request includes a request by the mobile node to access the foreign domain and a multicast flag to indicate a request for source specific multicast services;

alternatively, determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node has not entered a new foreign domain but has entered into coverage area of a new foreign agent within the same foreign domain; and

transmitting a multicast subscription request with an authentication extension to the new foreign agent in response to entering coverage area of the new foreign agent within the same foreign domain, wherein the multicast subscription request includes address of the home agent

135767
Page 5

for the mobile node and address of each correspondent that has received a binding update message from the home agent.

67. (Previously Added) The method of claim 66, wherein the step of determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node has entered a new foreign domain with a new foreign agent, comprises the steps of:

comparing the network access identifier in the agent advertisement message with a network access identifier stored in memory from previously received agent advertisement messages; and

determining that the network access identifiers are different.

68. (Previously Added) The method of claim 67, wherein the step of determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node has not entered a new foreign domain but has entered into coverage area of a new foreign agent within the same foreign domain, comprises the steps of:

comparing the network access identifier in the agent advertisement message with a network access identifier stored in memory from a previously received agent advertisement messages; and

determining that the wireless domain addresses in the network access identifiers are the same but the foreign agent addresses are different.

69. (Previously Added) The method of claim 68, further comprising the steps of:

alternatively, determining by the mobile node from the network access identifier extension to the agent advertisement message that the mobile node is in the same foreign domain under the coverage area of the same foreign agent; and

performing no new registration.

70. (Previously Added) The method of claim 69, further comprising the steps of:

in response to receiving a multicast subscription request from the mobile node entering coverage area of the new foreign agent within the same foreign domain, verifying authentication of the mobile node by the new foreign agent and retrieving session key information.

71. (Previously Added) The method of claim 70, further comprising the steps of:

after verifying authentication of the mobile node entering coverage area of the new foreign agent within the same foreign domain, relaying IP messages to the mobile node on the source specific multicast channels formed by associating the source specific multicast address of the mobile node in the multicast subscription request to each correspondent address in the multicast subscription request.

135767
Page 7